

CLAIMS

5 1. A method in a satellite positioning system receiver, comprising:
determining an estimated location of the receiver;
transmitting the estimated location to a network;
receiving from the network altitude information based upon the
estimated location of the receiver;
10 determining a new location of the receiver at the receiver based upon
the altitude information received from the network.

15 2. The method of Claim 1, determining the estimated location of the
receiver based upon a coarse altitude of the receiver.

20 3. The method of Claim 2, determining a derived altitude based
upon the estimated location of the receiver, the altitude information from the
network including a reference altitude, determining the new location of the
receiver if a difference between the derived and reference altitudes is outside an
altitude threshold.

25 4. The method of Claim 2, requesting and receiving the coarse
altitude from the network.

5 5. The method of Claim 1, receiving at the receiver terrain slope estimates at the estimated location from the network, determining the new location at the receiver based upon the altitude information and terrain slope estimates received from the network.

10 6. A method in a satellite positioning system receiver, comprising:
determining an estimated location of the receiver;
determining a reference altitude of the receiver based upon the estimated location of the receiver;
determining a new location of the receiver based upon the reference altitude information received.

15 7. The method of Claim 6, determining the reference altitude of the receiver by using the estimated location to index the reference altitude in a map database.

20 8. The method of Claim 6, determining the estimated location of the receiver based upon a coarse altitude of the receiver.

25 9. The method of Claim 8, determining a derived altitude from a 3-dimensional estimated location of the receiver, determining the new location of

the receiver if a difference between the derived altitude and the reference altitude of the receiver is outside an altitude threshold.

5 10. The method of Claim 6, determining the new location at the receiver based upon the altitude of the receiver and terrain slope information at the estimated location.

10 11. The method of Claim 6, storing 3-dimensional location fixes of the receiver on the receiver, determining the reference altitude of the receiver with the estimated location by averaging 3-dimensional location fixes stored on the receiver.

15 12. The method of Claim 6, storing a most recent 3-dimensional location of the receiver on the receiver, computing a derived altitude from the most recent 3-dimensional location, determining the reference altitude of the receiver from the derived altitude.

20 13. The method of Claim 6, determining the estimated location with a coarse altitude, determining a reference altitude and terrain slope information at the estimated location, updating the estimated location with the reference altitude
25 and the terrain slope information.

14. The method of Claim 6, determining the estimated location with
a coarse altitude, determining a reference altitude and terrain slope information at
the estimated location, updating the estimated location with the reference altitude,
determining a change in estimated location of two most recent estimated location
determinations, revising the reference altitude using the change in location and
terrain slope information, updating the estimated location with the revised
reference altitude.

15. A satellite positioning system receiver location method,
comprising:

determining an estimated location of the receiver based upon a
coarse altitude;

transmitting the estimated location of the receiver to a network;

determining a reference altitude of the receiver at the network based
upon the estimated location of the receiver;

determining a new location of the receiver based upon the reference
altitude of the receiver.

16. The method of Claim 15, determining the reference altitude of
the receiver by using the estimated location to index the reference altitude of the
receiver in a map database on the network.

17. The method of Claim 15, determining the estimated location of the receiver based upon a coarse altitude of the receiver.

18. The method of Claim 17, the estimated location is a 3-dimensional location fix, determining a derived altitude from the estimated location, determining the new location of the receiver if a difference between the derived and reference altitudes is outside an altitude threshold.

19. The method of Claim 18, determining the new location of the receiver at the network.

20. The method of Claim 17, the estimated location is a 3-dimensional location fix, determining a derived altitude from the estimated location, transmitting satellite information used to determine the estimated location of the receiver to the network, determining a difference between the derived altitude and the reference altitude, determining a corrected location of the receiver based upon the satellite information and the difference.

21. The method of Claim 20, transmitting satellite information and weighting factors used to determine the estimated location of the receiver to the network, determining a corrected location of the receiver based upon the satellite

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information, the weighting factors, and the difference between the derived altitude
and the altitude of the receiver determined at the network.